CO54-002-e

Electrophysiological prognostic factors of aphasia recovery

B. Glize (Dr)*, M. Villaina, I. Sibona (Prof), J.M. Mazauxa (Prof), P. Dehaila (Prof), P.A. Josepha (Prof), D. Guehla (Prof)
CHU de Bordeaux, Bordeaux, France
**Corresponding author.*
E-mail address: bertrand.glize@chuordeaux.fr (B. Glize)

Introduction Aphasia is the main cause of communication disorders following stroke. The individual prognosis of aphasia recovery remind difficult to establish in the acute phase. The aim of this study was to investigate whether the motor evoked potentials (MEP) of the hand and the orbicularis oris in the acute phase of stroke could predict aphasia recovery.
Materials and methods This study is ongoing at the University Hospital of Bordeaux. All consecutive patients with aphasia, first left hemispheric stroke confirmed by imaging, right-handed, non-demented, have been proposed for inclusion. MEPs were collected after stimulation of M1 the abductor pollicis and the orbicularis oris, right and left. The assessment of language performed in the acute phase was composed of: Language Screening Test (LAST) and the aphasia severity rating scale (ASRS) of the Boston Diagnostic Aphasia Examination (BDAE). Three and six months later, the language assessment was composed by: LAST, ASRS and BDAE. Good recovery from aphasia was defined as a score of ASRS 4 or 5. The association between the presence of a MEP after stimulation and good recovery was studied by Fischer exact tests.
Results In our interim analysis, 46 patients were followed at 3 months, and 23 at 6 months. The presence of MEP of the right hand (left cortical stimulation) was significantly associated with good recovery 3 months ($P = 0.003$) and 6 months ($P = 0.003$) after a stroke. The presence of MEP of the right orbicularis oris (left cortical stimulation) was significantly associated with good recovery 3 months ($P = 0.003$) and 6 months ($P = 0.011$).
Conclusion MEP of hand and lips predict recovery from aphasia. This results suggest the importance of production systems in the recovery of language, suggesting a new approach compared semantic core highlighted in the old classic models such as Lichtheim.
Keywords Motor-evoked potential; TMS; Aphasia; Prognosis; Stroke
Disclosure of interest The authors have not supplied their declaration of conflict of interest.

http://dx.doi.org/10.1016/j.rehab.2015.07.074

CO54-004-e

Anatomical predictors of recovery from visual neglect after prism adaptation therapy

M. Lunven (Dr)[a,*], M. Thiebaut De Schotten (Dr)[a], C. Bourlon (Dr)[b], R. Migliaccio (Dr)[a], K. Moreau (Dr)[c], E. Monnot[d], C. Duret (Dr)[b], G. Rode (Prof)[e], P. Bartolomeo (Prof)[a]
[a] *ICM, Hôpital de la Pitié-Salpêtrière, Inserm U1127, CNRS UMR 7225, Paris, France*
[b] *Clinique Les Trois Soleils, Boissise-Le-Roi, France*
[c] *Hôpital Saint-Maurice, Saint-Maurice, France*
[d] *Clinique du Bourget, Le Bourget, France*
[e] *Hôpital Henry-Gabrielle, Saint-Genis-Laval, France*
**Corresponding author.*
E-mail address: marine.lunven@hotmail.fr (M. Lunven)

Aim Prism adaptation (PA) is a non-invasive and convenient technique to rehabilitate visual neglect, but for unknown reasons it is not effective in all patients. Chronic persistent neglect is associated with inter-hemispheric white matter disconnection [1]. Patients-based studies and functional imaging studies report involvement of cortico-ponto-cerebellar pathway in PA mechanism. This network is a potential inter-hemispheric pathway [2], and might therefore compensate for interhemispheric disconnection in neglect. Here we hypothesize that PA improves left neglect by facilitating inter-hemispheric communication through modulation of cortico-ponto-cerebellar pathways. If so, then the integrity of these pathways should predict patients' response to PA.
Methods We used diffusion MRI to assess the relationships between PA-induced neglect recovery and microstructural integrity of white matter in 12 patients with unilateral strokes in the right hemisphere and chronic neglect. Voxelwise statistical analysis of the fractional anisotropy (FA) data was carried out using Tract-Based Spatial Statistics [3].
Results Consistent with our hypothesis, we found specific damage to fronto-ponto-cerebellar pathways in non-responder patients. Also, white matter alteration in the left undamaged hemisphere was associated with lack of improvement.
Conclusions Our findings suggest that PA can ameliorate signs of left visual neglect by improving inter-hemispheric communication through enhanced activity of fronto-ponto-cerebellar pathways. In particular, signals processed in the right cerebellum (spatial realignment) and in the left posterior parietal cortex (strategic calibration) might converge on left prefrontal areas, which receive from both the fronto-parietal superior longitudinal fasciculus and the fronto-ponto-cerebellar pathways.
Keywords Visual neglect; Prise adaptation; Diffusion MRI
Disclosure of interest The authors have not supplied their declaration of conflict of interest.
References
[1] Lunven M, Thiebaut de Schotten M, Duret C, Bourlon C, Migliaccio R, Rode G, et al. White matter lesional predictors of chronic visual neglect: a longitudinal study. Brain 2015;138:746–60.
[2] Glickstein M, Berlucchi G. Classical disconnection studies of the corpus callosum. Cortex 2008;44(8):914–27.
[3] Smith SM, Jenkinson M, Johansen-Berg H, et al. Tract-based spatial statistics: voxelwise analysis of multi-subject diffusion data. Neuroimage 2006;31:1487–505.
Further reading
Rossetti Y, Rode G, Pisella L, Farné A, Li L, Boisson D, et al. Prism adaptation to a rightward optical deviation rehabilitates left hemispatial neglect. Nature 1998;395:166–9.

http://dx.doi.org/10.1016/j.rehab.2015.07.075

CO54-005-e

The behavioral and electrophysiological effects of posterior parietal cortex damage in spatial audio-visual conflict

H. Cassoudesalle (Dr)[a,*], S. Scannella (Dr)[b], J. Pariente (Prof)[c], J.A. Lotterie (Dr)[c], P. Celsis (Dr)[d], E. Castel-Lacanal (Dr)[c], P. Marque (Prof)[c], X. De Boissezon (Prof)[c], J. Pastor (Dr)[d]
[a] *CHU de Bordeaux, Bordeaux, France*
[b] *Institut supérieur de l'aéronautique et de l'espace*
[c] *CHU de Toulouse*
[d] *INSERM UMR 825*
**Corresponding author.*
E-mail address: helene.cassoudesalle@gmail.com (H. Cassoudesalle)

Introduction While conflict between instructions and distractors makes normally reactions slower, right inferior parietal lobule (IPL) damage associated with left spatial neglect leads, in a visuomotor task, to the paradoxical facilitation of rightwards movements in the presence of conflicting leftward response plans (Coulthard et al.,